Appl. No.:   09/839,459
Amdt. dated May 25, 2004
Reply to Office Action of March 25, 2004

REMARKS/ARGUMENTS

Receipt of the Office Action dated March 25, 2004 is hereby acknowledged. In that Action, the Examiner: 1) rejected claims 1, 2, 16 and 17 as allegedly obvious over *Lomax* (U.S. Patent No. 6,493,740) in view of *Bressoud* (U.S. Patent No. 5,802,265); 2) objected to claims 3-7 as being dependent upon a rejected base claim, but otherwise allowable; 3) objected to claims 18-21 as being dependent upon a rejected based claim, but otherwise allowable; and 4) allowed claims 8-15 and 22-23.

With this Response, Applicant amends claims 1, 3-5, 16 and 18. Applicant respectfully submits that the pending claims are allowable over the art of record and respectfully requests reconsideration.

I.   ALLOWED AND EFFECTIVELY ALLOWED CLAIMS

Applicant appreciates the allowance of claims 8-15 and 22-23. With this Response, Applicant amends claims 3, 4, 5 and 18 to be in independent form including the limitations of the base claim and any intervening claims. With respect to claims 3, 4 and 5, Applicant removes the limitation requiring an I/O controller coupled to an I/O device, as these limitations are not needed to define over the cited art, and therefore should not affect the allowability of these claims.

II.   AMENDMENTS TO THE SPECIFICATION

With this Response, Applicant presents several amendments to the Specification. In particular, Applicant amends paragraphs [0003] through [0009] to reflect the serial number and filing dates (and in one case the patent number) of the noted applications. Further, Applicant amends a reference number in paragraph [0046] to match the drawing figures. Finally, Applicant notes the issued status of the patent application referenced in paragraph [0052]. No new matter is presented in these amendments.

III. CLAIM REJECTIONS

A.   Claim 1

Claim 1 stands rejected as allegedly obvious over *Lomax* in view of *Bressoud*. Applicant amends claim 1 to remove the I/O controller and I/O device limitations, as these limitations are not needed to define over the related art.

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In the Office Action dated March 25, 2004, in particular in paragraph 5 on page 4, the Examiner takes the position that redundantly threaded aspect of the various embodiments is not sufficiently claimed, and thus the claim is allegedly obvious over *Lomax* and *Bressoud*. While Applicant understands that the claims must be given their broadest reasonable interpretation for examination, Applicant does not believe that this examination rule can be used to remove claim terminology. In particular, claim 1 specifically recites "a pipelined, simultaneous and redundantly threaded processor . . . ." By ignoring the "redundantly" limitation, the Examiner has effectively turned the claimed system into a simultaneous multi-threaded (SMT) processor as defined in the Applicant's Background section. Applicant respectfully submits that this reading is improper. Moreover, claim 1 also recites, "wherein said SRT processor processes a set of instructions in a leading thread and **also in a redundant trailing thread** to detect transient faults in the computer system ... " (emphasis added). Thus, in addition to claiming a simultaneous and redundantly threaded processor, claim 1 specifically recites a leading thread and also a redundant trailing thread. Applicant therefore respectfully submits that viewing the claim as requiring only two non-redundant threads is not justified in view of the express claim language.

Applicant respectfully submits that the combination of *Lomax* and *Bressoud* does not teach or fairly suggest the limitations of claim 1. *Lomax* appears to be directed to duplicating context data in a single-context architecture (*Lomax* Abstract). *Bressoud* appears to be directed to fault tolerance using a primary and a back-up processor. (*See, Bressoud* Figure 3).

Claim 1, by contrast, recites, "a pipeline, simultaneous and redundantly threaded (SRT)" processor; ... a cycle counter configured to count clock cycles and advances once for each cycle of the processor clock; wherein said SRT processor processes a set of instructions in a leading thread and also in a redundant trailing thread ...; wherein when a read cycle count command appears in the leading thread, the processor loads the current value of the cycle counter and replicates the value for the corresponding read cycle count command in the

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trailing thread." Inasmuch as two processors are used in *Bressoud*, there would be no need to duplicate the read cycle counter.

Based on the foregoing, Applicant respectfully submits that claim 1, as well as claim 2 which depends from claim 1, should be allowed.

B.   Claim 16

Claim 16 stands rejected as allegedly obvious over *Lomax* in view of *Bressoud*. Applicant amends claim 16 to remove much of the terminology from the preamble, and these amendments necessitate several amendments to the body of the claim for antecedent basis considerations. Finally, Applicant makes more clear that the trailing thread is a duplicate of the leading thread, and both threads are executed in a single processor.

Applicant respectfully submits that the combination of *Lomax* and *Bressoud* does not teach or fairly suggest the limitations of claim 16. *Lomax* appears to be directed to duplicating context data, and *Bressoud* appears to be directed to providing fault tolerance using redundant processors.

By contrast, claim 16 specifically recites, "probing a cycle counter to fetch a current value of the cycle counter when a leading thread executing in a processor requests the cycle count; storing the current value In a cycle counter queue; and probing the cycle counter queue for the cycle count value for corresponding cycle count requests in a trailing thread, the trailing thread being a duplicate of the leading thread, and the tailing thread executing in the processor." Applicant respectfully submits that the context data replication of *Lomax* in combination with the duplicate processors of *Bressoud* does not teach or fairly suggest these limitations.

Based on the foregoing, Applicant respectfully submits that claim 16, as well as claim 17 which depends from claim 16, should be allowed.

IV.   CONCLUSION

Applicant respectfully requests reconsideration and allowance of the pending claims. If the Examiner feels that a telephone conference would expedite the resolution of this case, he is respectfully requested to contact the undersigned.

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In the course of the foregoing discussions, Applicant may have at times referred to claim limitations in shorthand fashion, or may have focused on a particular claim element. This discussion should not be interpreted to mean that the other limitations can be ignored or dismissed. The claims must be viewed as a whole, and each limitation of the claims must be considered when determining the patentability of the claims. Moreover, it should be understood that there may be other distinctions between the claims and the cited art which have yet to be raised, but which may be raised in the future.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case. If any fees or time extensions are inadvertently omitted or if any fees have been overpaid, please appropriately charge or credit those fees to Hewlett-Packard Company Deposit Account Number 08-2025 and enter any time extension(s) necessary to prevent this case from being abandoned.

Respectfully submitted,

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